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the applicant shall be required to undergo an examination to determine his competency.

[CGFR 65-50, 30 FR 16640, Dec. 30, 1965, as amended by USCG-1998-4442, 63 FR 52189, Sept. 30, 1998; USCG-2004-18884, 69 FR 58343, Sept. 30, 2004; USCG-2004-18884, 69 FR 68089, Nov. 23, 2004]

§ 12.15-7 Service or training requirements.

(a) An applicant for a certificate of service as qualified member of the engine department shall furnish the Coast Guard proof of qualification based on six months' service in a rating at least equal to that of wiper or coal passer.

(b) Training programs approved by the Commanding Officer, National Maritime Center, may be substituted for the required service at sea in accordance with the following:

(1) A graduate of a school ship may be rated as qualified member of the engine department upon satisfactory completion of the course of instruction. For this purpose, *school ship* is interpreted to mean an institution which offers a complete course of instruction, including a period of sea training, in the skills appropriate to the rating of qualified member of the engine department.

(2) Training programs other than those classified as a school ship may be substituted for up to one-half of the required service at sea.

(c) To qualify to receive an STCW endorsement for service as a "rating forming part of a watch in a manned engine-room or designated to perform duties in a periodically unmanned en-

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gine-room" on a seagoing vessel driven by main propulsion machinery 750 kW [1,000 hp] propulsion power or more, an applicant shall prove seagoing service that includes training and experience associated with engine-room watchkeeping and involves the performance of duties carried out under the direct supervision of a qualified engineer officer or a member of a qualified rating. The training must establish that the applicant has achieved the standard of competence prescribed in table A-III/4 of the STCW Code (incorporated by reference in §12.01-3), in accordance with the methods of demonstrating competence and the criteria for evaluating competence specified in that table.

[CGD 80-131, 45 FR 69241, Oct. 20, 1980, as amended by CGD 95-072, 60 FR 50460, Sept. 29, 1995; CGD 95-062, 62 FR 34538, June 26, 1997; CGD 95-062, 62 FR 40140, July 25, 1997; USCG-1998-4442, 63 FR 52189, Sept. 30, 1998; USCG-1999-5610, 67 FR 66069, Oct. 30, 2002]

§ 12.15-9 Examination requirements.

(a) Each applicant for certification as a qualified member of the engine department in the rating of oiler, watertender, fireman, deck engineer, refrigeration engineer, junior engineer, electrician, or machinist shall be examined orally or by other means and only in the English language on the subjects listed in paragraph (b) of this section. The applicant's general knowledge of the subjects must be sufficient to satisfy the examiner that he is qualified to perform the duties of the rating for which he makes application.

(b) List of subjects required:

Subjects	Machinist	Refrigerating engineer	Fireman/Watertender	Oiler	Electrician	Junior engineer	Deck engineer
1. Application, maintenance, and use of hand tools and measuring instruments	X	X	X	X	X	X	X
2. Uses of babbitt, copper, brass, steel, and other metals	X	X	X	X	X	X	X
3. Methods of measuring pipe, pipe fittings, sheet metal, machine bolts and nuts, packing, etc	X	X	X	X	X	X	X
4. Operation and maintenance of mechanical remote control equipment	X	.....	X	X	X	X	X
5. Precautions to be taken for the prevention of fire and the proper use of firefighting equipment	X	X	X	X	X	X	X
6. Principles of mechanical refrigeration; and functions, operation, and maintenance of various machines and parts of the systems .....	.....	X	.....	X	.....	X	.....
7. Knowledge of piping systems as used in ammonia, freon, and CO ₂ , including testing for leaks, operation of bypasses, and making up of joints	X	X

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Subjects	Ma- chinist	Re- friger- ating engi- neer	Fireman/ Watertender	Oiler	Elec- trician	Junior engi- neer	Deck engi- neer
8. Safety precautions to be observed in the operation of various refrigerating systems, including storage of refrigerants, and the use of gas masks and firefighting equipment	X	X	X	X	X	X	X
9. Combustion of fuels, proper temperature, pressures, and atomization .....	.....	.....	X	X	.....	X	.....
10. Operation of the fuel oil system on oil burning boilers, including the transfer and storage of fuel oil .....	.....	.....	X	X	.....	X	X
11. Hazards involved and the precautions taken against accumulation of oil in furnaces, bilges, floorplates, and tank tops; flarebacks, leaks in fuel oil heaters, clogged strainers and burner tips	X	X	X	X	X	X	.....
12. Precautions necessary when filling empty boilers, starting up the fuel oil burning system, and raising steam from a cold boiler .....	.....	.....	X	X	.....	X	.....
13. The function, operation, and maintenance of the various engineroom auxiliaries	X	X	X	X	X	X	.....
14. Proper operation of the various types of lubricating systems	X	X	X	X	X	X	X
15. Safety precautions to be observed in connection with the operation of engineroom auxiliaries, electrical machinery, and switchboard equipment	X	X	X	X	X	X	X
16. The function, operation, and maintenance of the bilge, ballast, fire, freshwater, sanitary, and lubricating systems ...	X	X	X	X	.....	X	X
17. Proper care of spare machine parts and idle equipment ...	X	X	X	X	X	X	X
18. The procedure in preparing a turbine, reciprocating, or Diesel engine for standby; also the procedure in securing ...	.....	.....	X	X	.....	X	.....
19. Operation and maintenance of the equipment necessary for the supply of water to boilers, the dangers of high and low water and remedial action .....	.....	.....	X	X	.....	X	.....
20. Operation, location, and maintenance of the various boiler fittings and accessories	X	.....	X	X	.....	X	.....
21. The practical application and solution of basic electrical calculations (Ohm's law, power formula, etc.) .....	.....	.....	.....	.....	X	X	X
22. Electrical wiring circuits of the various two-wire and three-wire D.C. systems and the various single-phase and poly-phase A.C. systems .....	.....	.....	.....	.....	X	X	X
23. Application and characteristics of parallel and series circuits .....	.....	.....	.....	.....	X	X	X
24. Application and maintenance of electrical meters and instruments .....	.....	.....	.....	.....	X	X	X
25. The maintenance and installation of lighting and power wiring involving testing for, locating and correcting grounds, short circuits and open circuits, and making splices .....	.....	.....	.....	.....	X	X	X
26. The operation and maintenance of the various types of generators and motors, both A.C. and D.C. ....	.....	.....	.....	.....	X	X	X
27. Operation, installation, and maintenance of the various types of electrical controls and safety devices .....	.....	.....	.....	.....	X	X	X
28. Testing and maintenance of special electrical equipment, such as telegraphs, telephones, alarm systems, fire-detecting systems, and rudder angle indicators .....	.....	.....	.....	.....	X	X	.....
29. Rules and Regulations and requirements for installation, repair, and maintenance of electrical wiring and equipment installed aboard ships .....	.....	.....	.....	.....	X	X	X
29a. Pollution laws and regulations, procedures for discharge containment and cleanup, and methods for disposal of sludge and waste from cargo and fueling operations	X	X	X	X	X	X	.....
30. Such further examination of a nonmathematical character as the Officer in Charge, Marine Inspection, may consider necessary to establish the applicant's proficiency	X	X	X	X	X	X	X

(c) Each applicant for certification as a qualified member of the engine department in the rating of pumpman shall, by oral or other examination, demonstrate sufficient knowledge of the subjects peculiar to that rating to

satisfy the Officer in Charge, Marine Inspection, that he or she is qualified to perform the duties of that rating.

(d) Applicants for certification as qualified members of the engine department in the rating of deck engine

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mechanic or engineman, who have proved eligibility for such endorsement under either §12.15-13 or §12.15-15, will not be required to take a written or oral examination for such ratings.

[CGFR 65-50, 30 FR 16640, Dec. 30, 1965, as amended by CGFR 66-46, 31 FR 13649, Oct. 22, 1966; CGD 71-161R, 37 FR 28263, Dec. 21, 1972; CGD 74-75, 42 FR 24741, May 16, 1977; CGD 94-029, 61 FR 47064, Sept. 6, 1996]

§ 12.15-11 General provisions respecting merchant mariner's documents endorsed as qualified member of the engine department.

The holder of a merchant mariner's document endorsed with one or more qualified member of the engine department ratings may serve in any unqualified rating in the engine department without obtaining an additional endorsement. This does not mean that an endorsement of one qualified member of the engine department rating authorizes the holder to serve in all qualified member of the engine department ratings. Each qualified member of the engine department rating for which a holder of a merchant mariner's document is qualified must be endorsed separately. When, however, the applicant qualifies for all ratings covered by a certificate as a qualified member of the engine department, the certification may read *QMED—any rating*. The ratings are as follows:

- (a) Refrigerating engineer.
- (b) Oiler.
- (c) Deck engineer.
- (d) Fireman/Watertender.
- (e) Junior engineer.
- (f) Electrician.
- (g) Machinist.
- (h) Pumpman.
- (i) Deck engine mechanic.
- (j) Engineman.

[CGFR 65-50, 30 FR 16640, Dec. 30, 1965, as amended by CGFR 66-46, 31 FR 13649, Oct. 22, 1966; CGD 74-45, 42 FR 24741, May 16, 1977]

§ 12.15-13 Deck engine mechanic.

(a) An applicant for a certificate as *deck engine mechanic* shall be a person holding a merchant mariner's document endorsed as *junior engineer*. The applicant shall be eligible for such certification upon furnishing one of the following:

(1) Satisfactory documentary evidence of sea service of 6 months in the

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rating of *junior engineer* on steam vessels of 4,000 horsepower or over; or,

(2) Documentary evidence from an operator of an automated vessel that he has completed satisfactorily at least 4 weeks indoctrination and training in the engine department of an automated steam vessel of 4,000 horsepower or over; or,

(3) Satisfactory completion of a course of training for *deck engine mechanic* acceptable to the Commanding Officer, National Maritime Center.

(b) The Officer in Charge, Marine Inspection, who is satisfied that an applicant for the rating of *deck engine mechanic* meets the requirements specified in this section, will endorse this rating on the current merchant mariner's document held by the applicant.

(c) Any holder of a merchant mariner's document endorsed for *any unlicensed rating in the engine department* or *QMED—any rating* is qualified as a *deck engine mechanic* and that endorsement will not be entered on his document.

[CGFR 66-46, 31 FR 13649, Oct. 22, 1966, as amended by CGD 95-072, 60 FR 50460, Sept. 29, 1995; CGD 95-028, 62 FR 51196, Sept. 30, 1997; USCG-1998-4442, 63 FR 52189, Sept. 30, 1998]

§ 12.15-15 Engineman.

(a) An applicant for a certificate as *engineman* shall be a person holding a merchant mariner's document endorsed as *fireman/watertender* and *oiler*, or *junior engineer*. The applicant shall be eligible for such certification upon furnishing one of the following:

(1) Satisfactory documentary evidence of sea service of 6 months in any one or combination of *junior engineer*, *fireman/watertender* or *oiler* on steam vessels of 4,000 horsepower or over; or,

(2) Documentary evidence from an operator of a *partially automated* steam vessel that he has completed satisfactorily at least 2 weeks indoctrination and training in the engine department of a *partially automated* steam vessel of 4,000 horsepower or over; or

(3) Satisfactory completion of a course of training for *engineman* acceptable to the Commanding Officer, National Maritime Center.

(b) The Officer in Charge, Marine Inspection, who is satisfied that an applicant for the rating of *engineman* meets